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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
08/984,005	12/03/97	DUNTON	R 42390.P5319

LM02/0818
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EXAMINER

WILSON, J

ART UNIT	PAPER NUMBER
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2712

DATE MAILED: 08/18/99

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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
08/984,005

Applicant(s)
Dunton et al.

Examiner
Jacqueline Wilson

Group Art Unit
2712



☒ Responsive to communication(s) filed on Jun 1, 1999

☒ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire three month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) 1-24 is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 1-24 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been
☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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DETAILED ACTION II

Response to Arguments

1. Applicant's arguments filed 06/01/99 have been fully considered but they are not persuasive.

The applicant argues the limitation of the digital imaging array, which the examiner has taken official notice. The applicant states that the examiner "must provide prior art that teaches all of her asserted positions". The examiner has done so and has included this prior art in the rejection below. The applicant further argues that the terminology of saturation is misinterpreted by the examiner. However, on page 4 lines 15-22, the applicant states "...the dynamic range for the intensity of light received by a pixel of the imaging array is inherently limited. Therefore, when a pixel is exposed to an intensity of light that exceeds that dynamic range, the image quality is affected because the digital pixel output signal becomes saturated or clipped..." This implies to the examiner that when the intensity of light is so great, the image quality is not acceptable. The Kokai application (as the applicant refers) states in the Constitution that when an abnormally strong light is made incident on the image pickup surface, the light shielding part (14a) of the corresponding position are made into a shielding condition. This means that the areas of the image pickup device that detects an abundance of saturation is performed differently by the processing circuitry by changing the conditions of the light shielding portions on the image pickup

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surface. It is understood that the applicants system is obviously different than the prior art, however, the claims are written so broadly that the prior art is able to read on the claims.

Specification

2. The disclosure is objected to because of the following informalities:

Page 8, line 12, "may ways" should be changed to --many ways--.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 9, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuribayashi (JP 2-76481 (A)) and Pain et al. (U.S. 5,886,659).

Regarding Claim 1, Kuribayashi teaches an image processing circuitry (See Fig. 1), the image processing circuitry being adapted to process digital output signals produced by an imaging array. Although Kuribayashi fails to teach a digital imaging array, it is notoriously well known in the art to have digital imaging arrays in for outputting digital signals, such as the sensor similar in Pain et al. Pain et al specifically discloses that it is desirable to integrate ADCs (analog to digital

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converters) and other functional circuits, such as an image sensor, on a single chip to improve system reliability, noise resistance and chip-to-chip interfacing (col. 1, lines 28-32). The discussion of system reliability and improving chip-to-chip interfacing would have obvious to one having ordinary skill in the art to mean that signals are easily transferable to other elements in an imaging system such as a memory means. This is the reasoning why the examiner took Official Notice stating the using these arrays produces less noise in signals and allows for easier storage . Therefore it would have been obvious to one of ordinary skill in the art to include a digital imaging array for outputting signals to be processed.

Kuribayashi also teaches that the transmission light control part (element 15) processes saturated (bright) pixel outputs signals differently from non-saturated signals (page 6 of translation) by adjusting the optically shielded elements (element 14a) according to the intensity of the light.

Claim 9 is analyzed and discussed with respect to Claim 1. (See rejection of Claim 1 above.)

Claim 17 is analyzed and discussed with respect to Claim 1. (See rejection of Claim 1 above.)

5. Claims 2-8, 10-16, and 18-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuribayashi and Takase (U.S. 5,278,658).

Regarding Claim 2, Kuribayashi fails to disclose the image processing circuitry is adapted to process saturated digital pixel output signals by subtracting an estimate of the dark image fixed

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pattern noise for the imaging array sensors. However, Takase '658 teaches that an average of dark signals output from the optically shielded cells is removed from the image signal output from each of the cells arranged in an effective area (or regions; col. 1, lines 57-61). By averaging the dark signals allows for a more accurate removal process from the image signals since each cell is different. Kuribayashi teaching of processing saturated and non-saturated differently by processing each cell in distinct manners, it would have been obvious to include Takase '658 teaching of removing the average of dark signals from each cell which would include the saturated signals of Kuribayashi. Therefore, it would have been obvious to one of ordinary skill in the art to modify Kuribayashi with Takase '658 to include the image processing circuitry being adapted to process saturated pixel output signals by subtracting an estimate (average) of the dark image fixed pattern noise for the imaging array sensors.

Regarding Claim 3, Kuribayashi fails to disclose the image processing circuitry is adapted to estimate the dark fixed pattern noise by sampling from a dark image comprising stored digital pixel output signals. However, Takase '658 teaches that a sample-hold circuit (element 4) may be used for sampling dark signals which produces average dark signals (col. 5, lines 10-15). Sample-hold circuits are well known in the art for sampling and storing signals to be processed in a processing circuitry, and would have been obvious to include in Kuribayashi for temporarily storing dark signals for subtracting from image signals. Therefore, it would have been obvious to one of ordinary skill in the art modify Kuribayashi with Takase '658 by including in the image

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processing circuitry an estimate of the dark fixed pattern noise by sampling from a dark image comprising stored pixel output signals.

Regarding Claim 4, Kuribayashi fails to disclose the image processing circuitry is adapted to sample the dark image in regions corresponding to the regions of saturated digital pixel output signals in an image of interest. However, Takase '658 teaches that dark signals are removed from image signal output from each of the cells arranged in an effective area (col.1, lines 57-60), which includes saturated pixels, and the subtracter subtracts the dark signal component from an image signal obtained for each corresponding cell under an exposure condition (see Abstract). This is performed for the purpose of properly eliminating the noise from the exact area so that the image will lack unwanted noise from a particular area of interest. Therefore, it would have been obvious to one of ordinary skill in the art to sample the dark image regions corresponding to the regions of saturated pixel output signals in an image of interest.

Regarding Claim 5, both Kuribayashi and Takase '658 describes the image processing circuitry is adapted for use with imaging array comprising a CCD sensor.

Regarding Claim 6, Kuribayashi fails to disclose the image processing circuitry comprises fixed pattern noise reduction circuitry. However, Takase '658 teaches a dark signal removing means coupled to the dark signal component generating means for removing the dark signal component generated for each cell. By using this type of fixed pattern noise reduction circuitry allows the system to remove dark signals from each cell for producing images without dark

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current. Therefore, it would have been obvious to one of ordinary skill in the art for the image processing circuitry to comprise a fixed pattern noise reduction circuitry.

Claim 7 is analyzed and discussed with respect to Claim 6. (See rejection of Claim 6 above.)

Claim 8 is analyzed and discussed with respect to Claim 4. (See rejection of Claim 4 above.)

Claim 10 is analyzed and discussed with respect to Claim 2. (See rejection of Claim 2 above.)

Claim 11 is analyzed and discussed with respect to Claim 3. (See rejection of Claim 3 above.)

Claim 12 is analyzed and discussed with respect to Claim 4. (See rejection of Claim 4 above.)

Claim 13 is analyzed and discussed with respect to Claim 5. (See rejection of Claim 5 above.)

Claim 14 is analyzed and discussed with respect to Claim 6. (See rejection of Claim 6 above.)

Claim 15 is analyzed and discussed with respect to Claim 7. (See rejection of Claim 7 above.)

Claim 16 is analyzed and discussed with respect to Claim 8. (See rejection of Claim 8 above.)

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Claim 18 is analyzed and discussed with respect to Claims 1 and 2. (See rejection of Claims 1 and 2 above.)

Claim 19 is analyzed and discussed with respect to Claim 3. (See rejection of Claim 3 above.)

Claim 20 is analyzed and discussed with respect to Claim 4. (See rejection of Claim 4 above.)

Claim 21 is analyzed and discussed with respect to Claim 5. (See rejection of Claim 5 above.)

Claim 22 is analyzed and discussed with respect to Claim 6. (See rejection of Claim 6 above.)

Claim 23 is analyzed and discussed with respect to Claim 7. (See rejection of Claim 7 above.)

Claim 24 is analyzed and discussed with respect to Claim 8. (See rejection of Claim 8 above.)

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

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MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Takahashi et al. (U.S. 5,293,239)

Wiggins (U.S. 4,216,503)

Tani (U.S. 5,719,625)

Tani (U.S. 5,477,265)

Mita (U.S. 5,267,335)

Johnson et al. (U.S. 5,303,064)

Houchin et al. (U.S. 5,047,861)

8. Any inquiries concerning this communication from the examiner should be directed to **Jacqueline Wilson** whose telephone number is (703) 308-5080. The examiner can normally be reached Monday-Friday from 9:00 A.M. to 5:00 P.M.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Wendy Garber**, can be reached at (703) 305-4929. The fax number for this group is (703) 308-5359.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or Faxed to:

(703) 308-9051, (for formal communication intended for entry)

or:

(703) 308-5359, (for informal or draft communications, please label

"PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, V.A., Sixth Floor (Receptionist).

JBW 

August 6, 1999


Wendy Garber
Supervisory Patent Examiner
Technology Center 2700